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DENNIS L. COOK, ESQ.
10004 MARATHON COURT
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TAMPA, FL 33615

EXAMINER

MILORD, MARCEAU

| ART UNIT | PAPER NUMBER |
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2682

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/916,054

Applicant(s)

BOBIER ET AL.

Examiner

Marceau Milord

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-17 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolanek (US Patent No 6147553) in view of Hunsinger et al (US Patent No 5465396) and Cowie et al (US Patent No 6717992 B2).

Regarding claims 1-2, Kolanek discloses a modulated radio frequency carrier (fig. 1 and fig. 6) capable of transmitting a binary information stream made up of first and second binary states (col. 2, lines 44-54) comprising: a carrier frequency waveform made up of wavelets; and, said wavelets having been modulated (col. 3, line 44- col. 4, line 67; col. 5, line 42- col. 6, line 28; col. 6, line 29- col. 7, line 41; col. 8, line 43-67).

However, Kolanek does not specifically disclose the features of wavelets that have been modulated in accordance with said information stream by having suppressed the amplitude of an integer number said wavelets corresponding to said first binary states of said information stream

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and not having suppressed the amplitude of said wavelets corresponding to said to said second binary states of said information stream; a continuous sequence of wavelets being defined by a 360 degree cycle between crossover positions; said crossover positions representing a substantially zero energy level.

On the other hand, Hunsinger et al, from the same field of endeavor, discloses a system for combining AM and FM transmissions. FM Digital Audio Broadcast allows simultaneous transmission of DAB and FM over existing FM allocations without interfering with conventional analog FM signals. This technique provides a vehicle for the simultaneous transmission of supplemental programming, such as high bit rate DAB, with existing FM over the same spectral allocation at the same time without degrading the analog FM transmission. Further resistance to multipath is derived through the addition of a continuously transmitted wideband reference signal to the digital sub channel modulation waveforms (col. 2, line 30- col. 3, line 64). This reference waveform is used at the receiver as a training system for adaptive multipath equalization with quick and continuous updating. Furthermore, Hunsinger et al shows in figure 1 a FM waveform that is multiplied in mixer by AM message to yield double sideband-suppressed carrier over FM signal. This technique also provides a base band cancel signal, which is generated from a "look up table". The look up table includes a running estimate of the FM to AM conversion interference to be expected from a given instantaneous FM frequency. Two separate polynomials are also used to continuously estimate and cancel the in-phase and quadrature components of the FM to AM interference caused by multipath (figs. 1-4; figs. 11-12; col. 6, line 9- col. 7, line 21; col. 9, line 25- col. 10, line 24; col. 13, lines 27-64; col. 17, lines 7-46).

However, Cowie et al also discloses a method and system for receiving time spaced signals transmitted in accordance with a time layout. The time spaced signals may be pulses or bursts. The time spaced signals convey at least one intelligence signal. Each of the plurality of intermediate signals can be separately integrated to produce bits or data. The bits or data are ordered to produce the at least one intelligence signal based on a bit order, which may be predetermined or specified by a bit ordering code (figs. 4, 7-13; col. 5, line 23- col. 6, line 44; col. 25, line 24- col. 26, line 64; col. 29, line 34- col. 30, line 63). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Cowie to the modified system of Hunsinger and Kolanek in order to improve received signal quality of impulse radio systems in the presence of periodic interference.

Regarding claims 3-8, Kolanek discloses a method for transmitting binary information (fig. 1 and fig. 6) from a binary information stream over a radio frequency carrier (col. 2, lines 44-54) comprising the steps of: generating a radio frequency carrier at a select carrier frequency such that said radio frequency carrier has a waveform with wavelets with similar amplitudes; modulating said radio frequency carrier in accordance with said binary data sequence by suppressing the amplitude of an integer number of said wavelets corresponding to said first binary states to derive first carrier binary signals and not suppressing the amplitude of an integer number of said wavelets corresponding to said second binary signals to derive second carrier binary states thereby generating a suppressed cycle modulated carrier made up of said first carrier binary signals and said second carrier binary signals; and, broadcasting said suppressed cycle modulated carrier such that a suppressed cycle modulated radio frequency signal is

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generated (col. 3, line 44- col. 4, line 67; col. 5, line 42- col. 6, line 28; col. 6, line 29- col. 7, line 41; col. 8, line 43-67).

However, Kolanek does not specifically disclose the features of modulating said radio frequency carrier in accordance with said binary data sequence by suppressing the amplitude of an integer number of said wavelets corresponding to said first binary states to derive first carrier binary signals and not suppressing the amplitude of an integer number of said wavelets corresponding to said second binary signals to derive second carrier binary states thereby generating a suppressed cycle modulated carrier made up of said first carrier binary signals and said second carrier binary signals; and, broadcasting said suppressed cycle modulated carrier such that a suppressed cycle modulated radio frequency signal is generated; a continuous sequence of wavelets with similar amplitudes; said wavelets being defined by a 360 degree cycle between crossover positions of said radio frequency carrier waveform; said crossover positions representing a substantially zero energy level; receiving said information stream as a binary data sequence of first and second binary states.

On the other hand, Hunsinger et al, from the same field of endeavor, discloses a system for combining AM and FM transmissions. FM Digital Audio Broadcast allows simultaneous transmission of DAB and FM over existing FM allocations without interfering with conventional analog FM signals. This technique provides a vehicle for the simultaneous transmission of supplemental programming, such as high bit rate DAB, with existing FM over the same spectral allocation at the same time without degrading the analog FM transmission. Further resistance to multipath is derived through the addition of a continuously transmitted wideband reference signal to the digital sub channel modulation waveforms (col. 2, line 30- col.

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3, line 64). This reference waveform is used at the receiver as a training system for adaptive multipath equalization with quick and continuous updating. Furthermore, Hunsinger et al shows in figure 1 a FM waveform that is multiplied in mixer by AM message to yield double sideband-suppressed carrier over FM signal. This technique also provides a base band cancel signal, which is generated from a "look up table". The look up table includes a running estimate of the FM to AM conversion interference to be expected from a given instantaneous FM frequency. Two separate polynomials are also used to continuously estimate and cancel the in-phase and quadrature components of the FM to AM interference caused by multipath (figs. 1-4; figs. 11-12; col. 6, line 9- col. 7, line 21; col. 9, line 25- col. 10, line 24; col. 13, lines 27-64; col. 17, lines 7-46).

However, Cowie et al also discloses a method and system for receiving time spaced signals transmitted in accordance with a time layout. The time spaced signals may be pulses or bursts. The time spaced signals convey at least one intelligence signal. Each of the plurality of intermediate signals can be separately integrated to produce bits or data. The bits or data are ordered to produce the at least one intelligence signal based on a bit order, which may be predetermined or specified by a bit ordering code (figs. 4, 7-13; col. 5, line 23- col. 6, line 44; col. 25, line 24- col. 26, line 64; col. 29, line 34- col. 30, line 63). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Cowie to the modified system of Hunsinger and Kolanek in order to improve received signal quality of impulse radio systems in the presence of periodic interference.

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Allowable Subject Matter

2. Claims 9-17 are allowed.

Response to Arguments

3. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


MARCEAU MILORD

Marceau Milord

Examiner

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